Group de Loop

Section 1 – Groups Anyone?

You, Me
& SVG!

Where We Left Off

```
index.html
```

```html
<!DOCTYPE html>
<html>
  <head>...</head>
  <body>
    <svg ...>

      <circle r="130" cx="134" cy="134"/>
      <line x1="47" y1="198" x2="221" y2="198"/>
      <polygon points="52,190 134,30 216,190"/>
      <text x="134" y="142">SVG</text>

    </svg>
  </body>
</html>
```
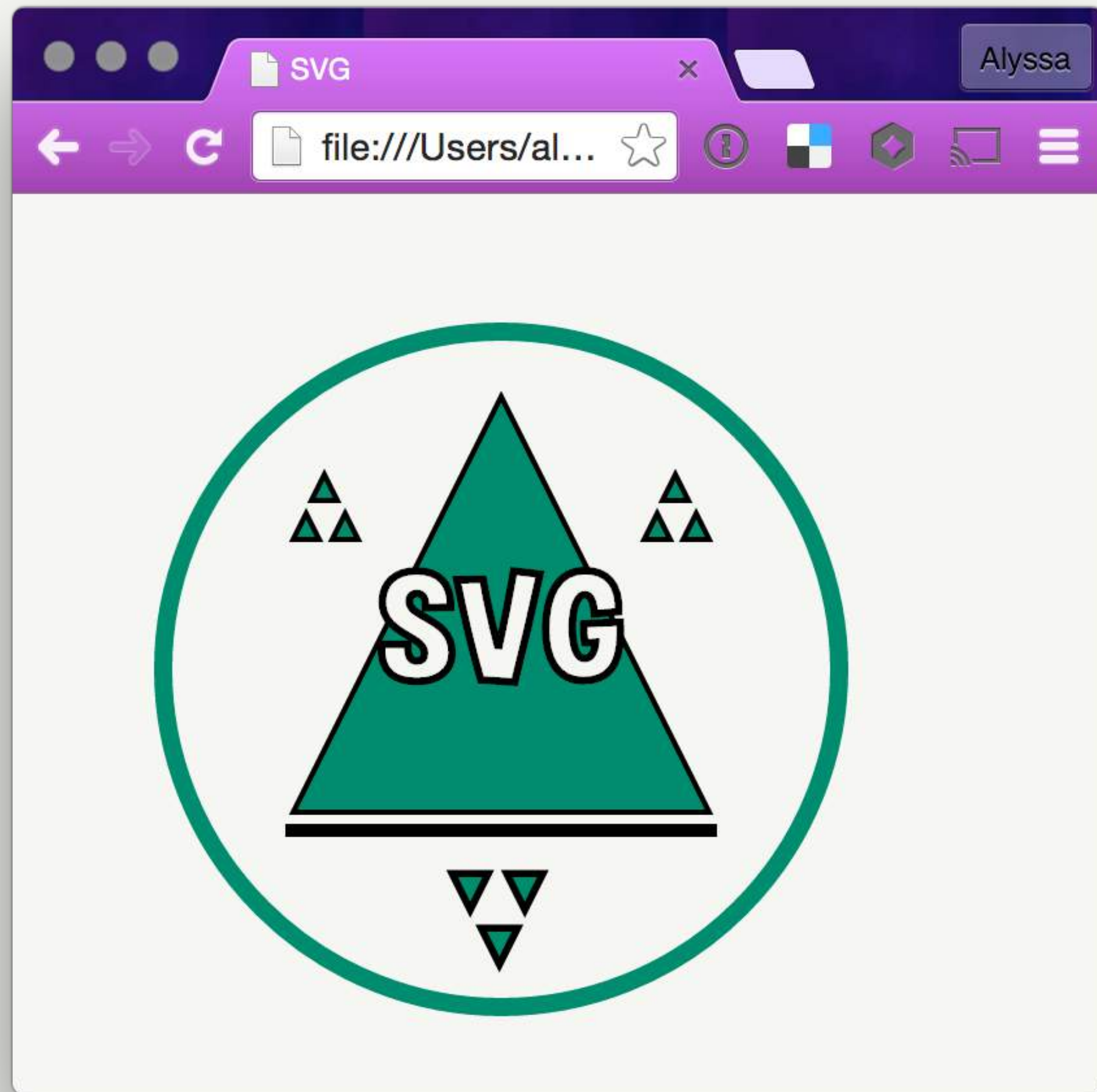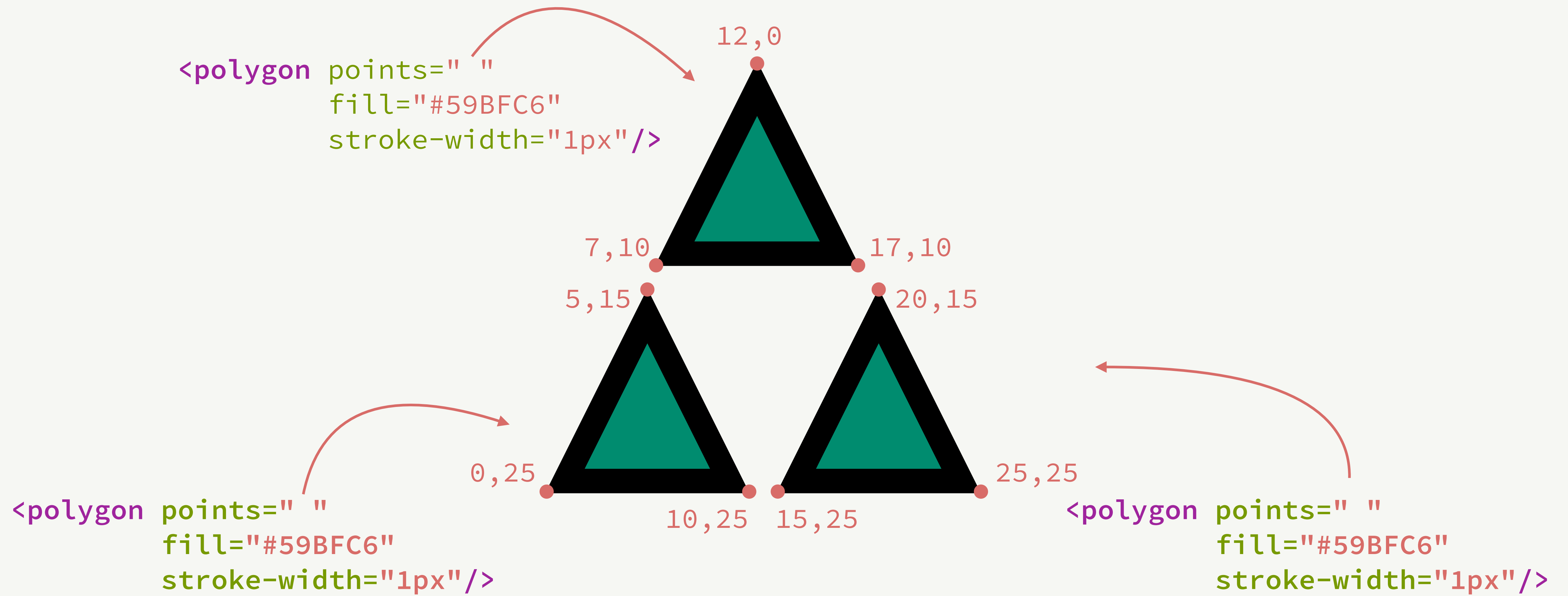
Adding Some Detail to Our Badge

Our badge is still looking a little plain. How could we add some detail (like below) to our badge?

Drawing the Triforce

We would start off by drawing and positioning three of the triangles.

```
<polygon points=" "
         fill="#59BFC6"
         stroke-width="1px"/>
```

12,0

7,10   17,10

5,15   20,15

0,25   10,25 15,25 25,25

```
<polygon points=" "
         fill="#59BFC6"
         stroke-width="1px"/>
```

```
<polygon points=" "
         fill="#59BFC6"
         stroke-width="1px"/>
```

But Our Triangles Are Not on the Badge

```html
index.html

<!DOCTYPE html>
<html>
  <head>...</head>
  <body>
    <svg xmlns="..." xmlns:svg="...">

      <circle r="130" cx="134" cy="134"/>
      <line x1="47" y1="198" x2="221" y2="198"/>
      <polygon points="52,190 134,30 216,190"/>
      <text x="134" y="142">SVG</text>
      <polygon points="7,10 12,0 17,10"   fill="#59BFC6" .../
      <polygon points="0,25 5,15 10,25"   fill="#59BFC6" .../
      <polygon points="15,25 20,15 25,25" fill="#59BFC6" .../
    </svg>
  </body>
</html>
```
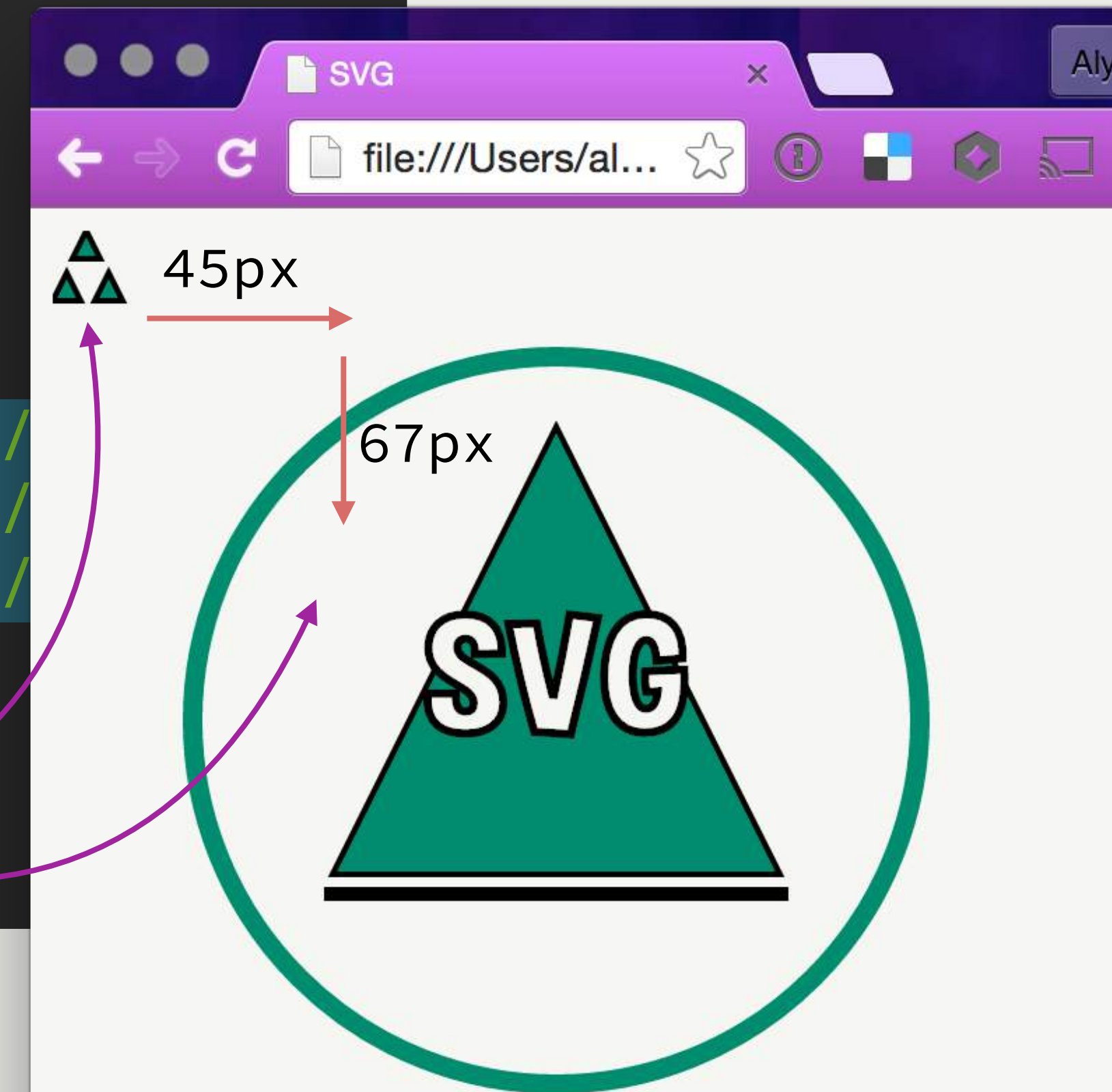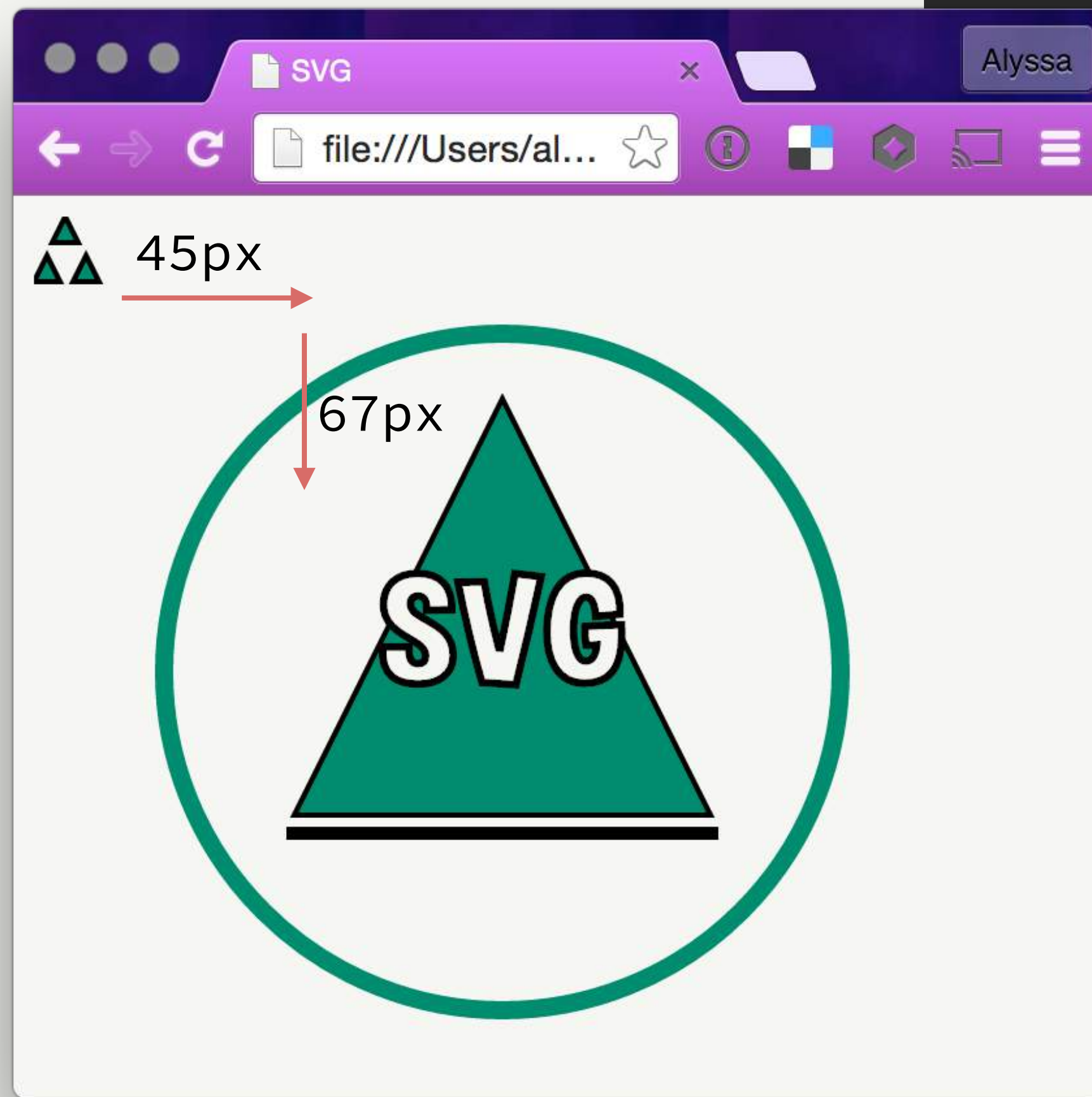
How are we going to get each triangle into the badge?

45px

67px

Moving Them Into the Badge

We could add to the x and y to fix the position.


```
...

                                     +45px +67px +45px +67px +45px +67px
<polygon points="7,10 12,0 17,10"   fill="#59BFC6" .../>

                                     +45px +67px +45px +67px +45px +67px
<polygon points="0,25 5,15 10,25"   fill="#59BFC6" .../>

                                     +45px +67px +45px +67px +45px +67px
<polygon points="15,25 20,15 25,25" fill="#59BFC6" .../>
```

But there is a better way!

Group to the Rescue!

By grouping these shapes together, we now have the option to transform.

```
<g>
  <polygon points="7,10 12,0 17,10"   fill="#59BFC6" .../>
  <polygon points="0,25 5,15 10,25"   fill="#59BFC6" .../>
  <polygon points="15,25 20,15 25,25" fill="#59BFC6" .../>
</g>
```

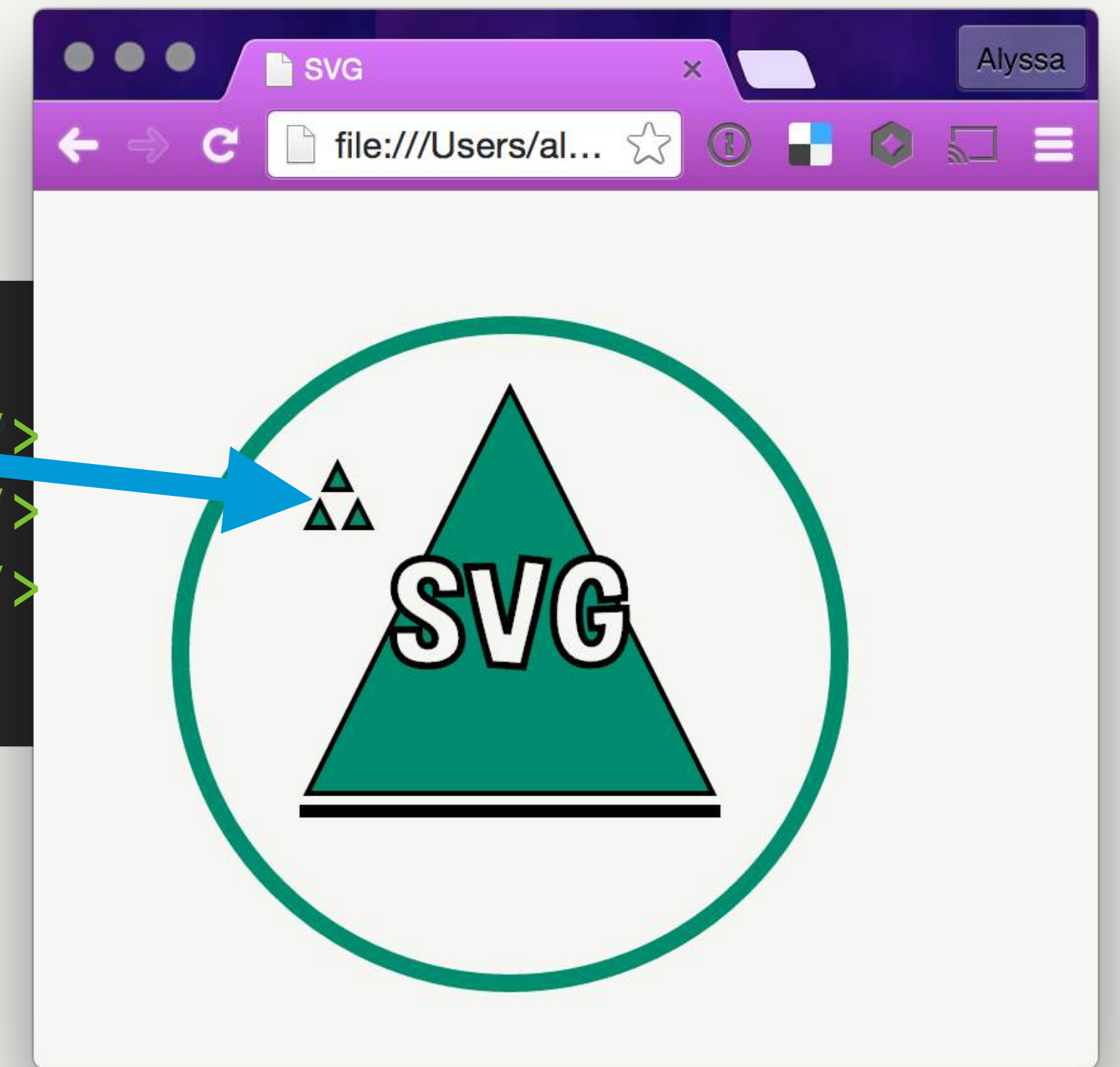**This will enable us to move the group as a whole over and down 45,67.**

Translating (Moving) the Group

The SVG transform attribute allows us to do multiple things, like translate, rotate, and scale. In order to move the group, we will need to use transform's translate option.

Translate takes two values that will *move* the x and y of the group by the values specified.

Translate means "to move."

move x   move y

```
<g transform="translate(45,67)">
  <polygon points="7,10 12,0 17,10"     fill="#59BFC6" .../>
  <polygon points="0,25 5,15 10,25"     fill="#59BFC6" .../>
  <polygon points="15,25 20,15 25,25" fill="#59BFC6" .../>
</g>
```
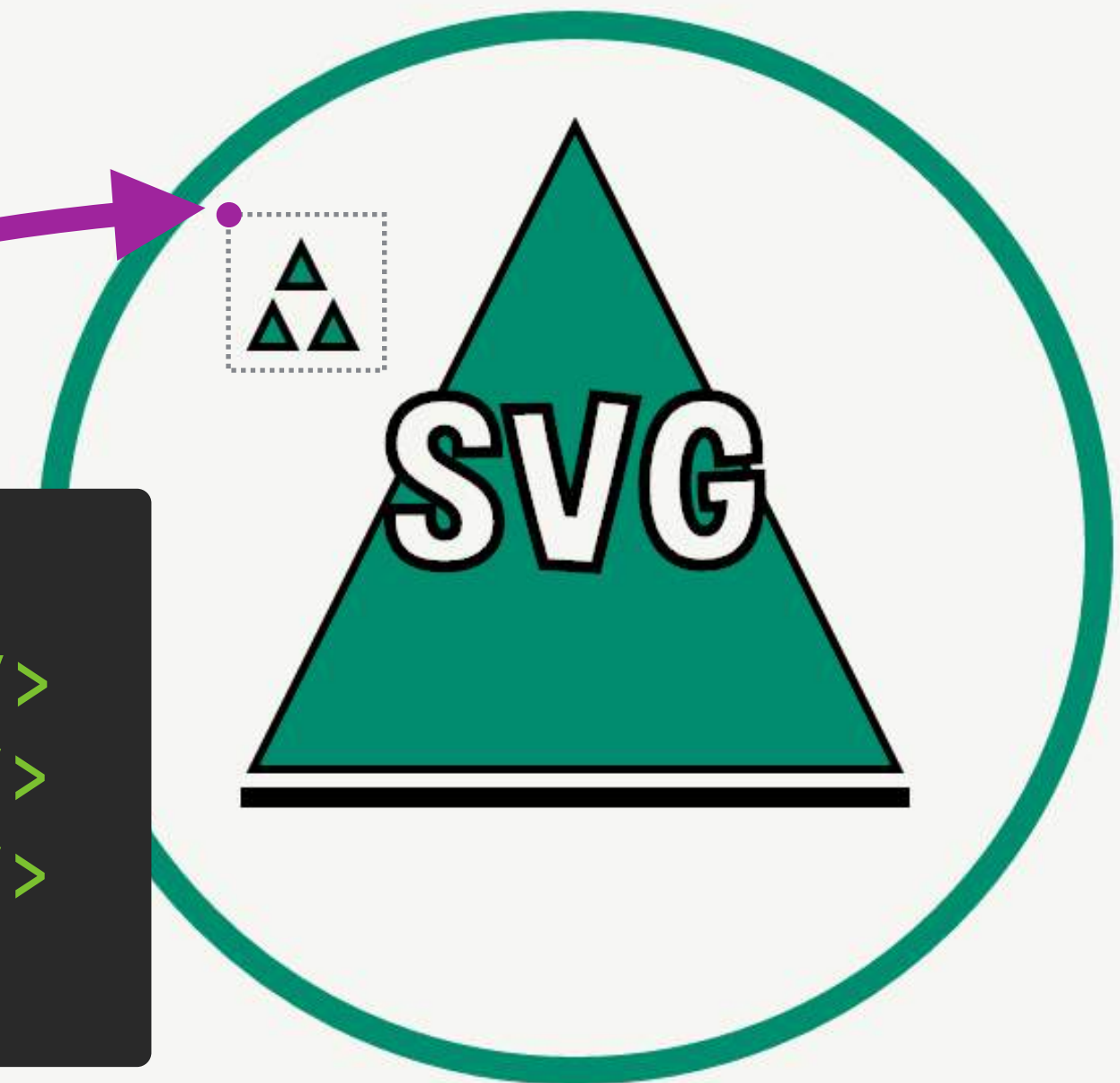
Group Items Have a New Origin!

When you group items, you effectively give them a new 0,0 — the top left of the group!

These numbers are now starting from the groups origin.

```
<g transform="translate(45,67)">
  <polygon points="7,10 12,0 17,10"     fill="#59BFC6" .../>
  <polygon points="0,25 5,15 10,25"     fill="#59BFC6" .../>
  <polygon points="15,25 20,15 25,25"   fill="#59BFC6" .../>
</g>
```
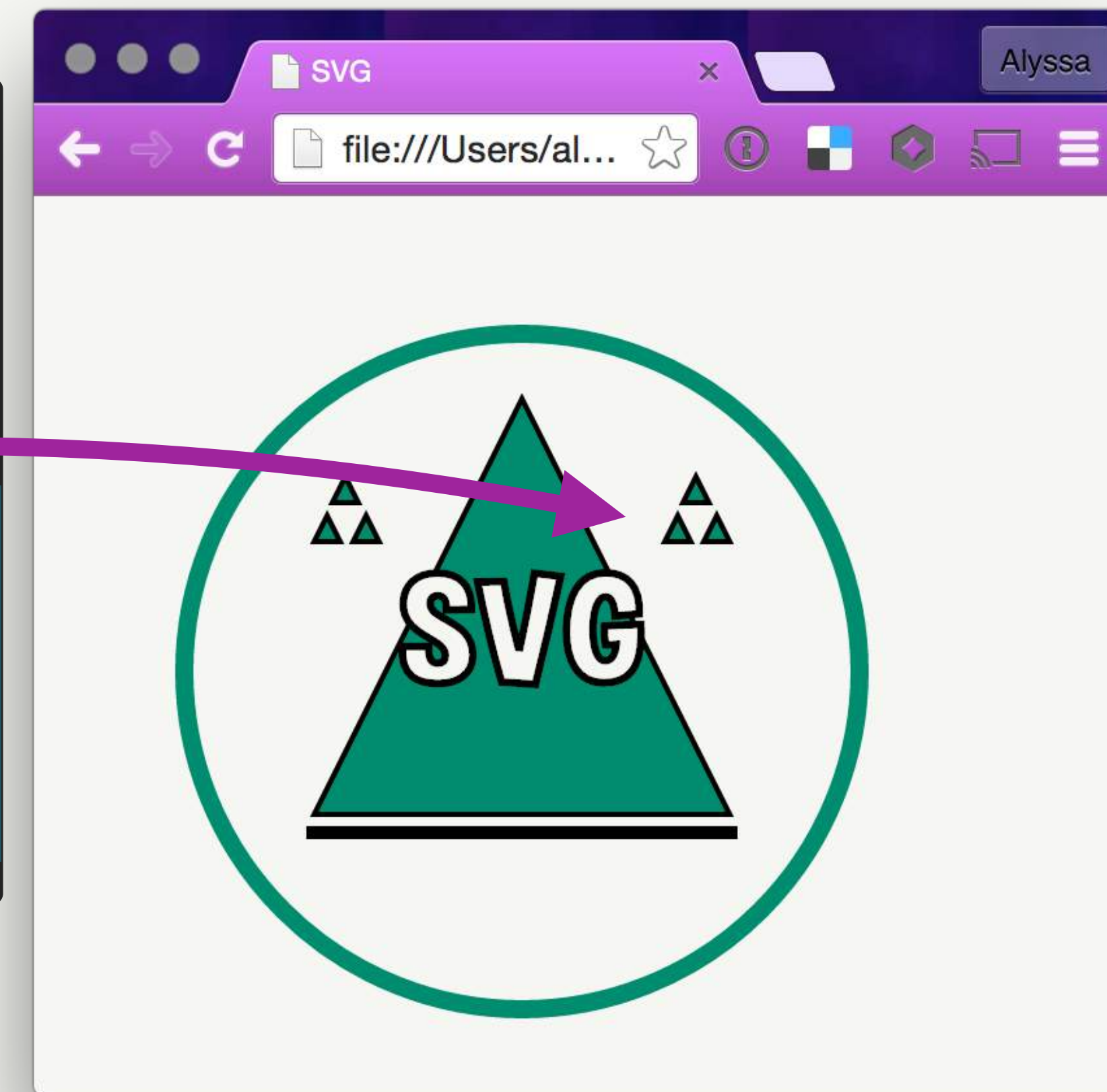
SVG

The Second Group

The second group needs to be 198 from the left edge of the viewport and 67 from the top.

```
<g transform="translate(45,67)">
  <polygon points="7,10 12,0 17,10"    fill="#59BFC6" .../>
  <polygon points="0,25 5,15 10,25"    fill="#59BFC6" .../>
  <polygon points="15,25 20,15 25,25"  fill="#59BFC6" .../>
</g>
<g transform="translate(198,67)">
  <polygon points="7,10 12,0 17,10"    fill="#59BFC6" .../>
  <polygon points="0,25 5,15 10,25"    fill="#59BFC6" .../>
  <polygon points="15,25 20,15 25,25"  fill="#59BFC6" .../>
</g>
```
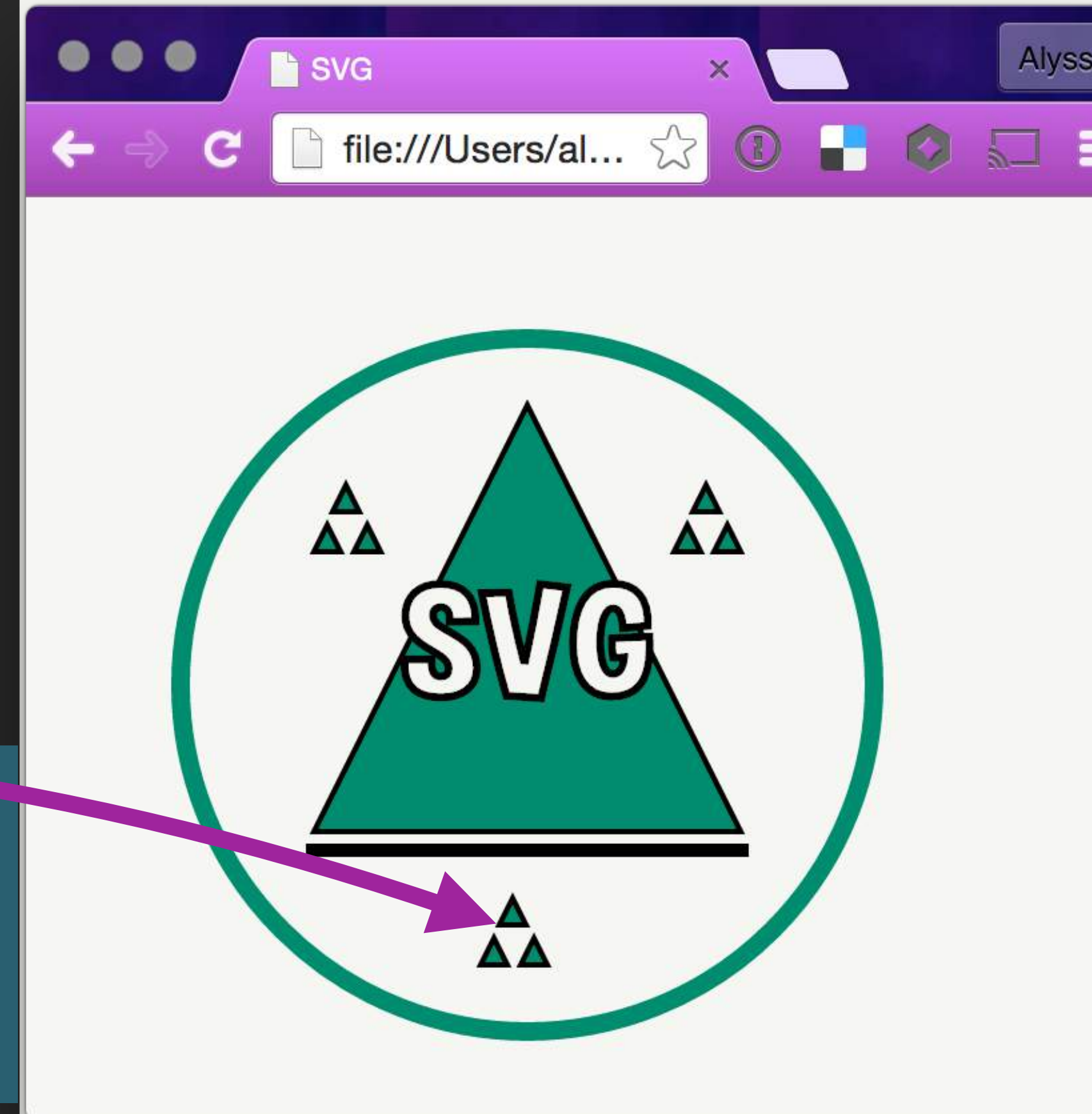
The Third Group

The last group needs to be 121.5 from the left edge of the viewport and 211 from the top.

```
<g transform="translate(45,67)">
  <polygon points="7,10 12,0 17,10"   fill="#59BFC6" .../>
  <polygon points="0,25 5,15 10,25"   fill="#59BFC6" .../>
  <polygon points="15,25 20,15 25,25" fill="#59BFC6" .../>
</g>
<g transform="translate(198,67)">
  <polygon points="7,10 12,0 17,10"   fill="#59BFC6" .../>
  <polygon points="0,25 5,15 10,25"   fill="#59BFC6" .../>
  <polygon points="15,25 20,15 25,25" fill="#59BFC6" .../>
</g>
<g transform="translate(121.5,211)">
  <polygon points="7,10 12,0 17,10"   fill="#59BFC6" .../>
  <polygon points="0,25 5,15 10,25"   fill="#59BFC6" .../>
  <polygon points="15,25 20,15 25,25" fill="#59BFC6" .../>
</g>
```

SVG coordinates take decimals!

These Styles Are Duplicated

```svg
<g class="triangle_group" transform="translate(45,67)">
  <polygon points="7,10 12,0 17,10" fill="#59BFC6" stroke-width="1"/>
  <polygon points="0,25 5,15 10,25" fill="#59BFC6" stroke-width="1"/>
  <polygon points="15,25 20,15 25,25" fill="#59BFC6" stroke-width="1"/>
</g>

<g class="triangle_group" transform="translate(198,67)">
  <polygon points="7,10 12,0 17,10" fill="#59BFC6" stroke-width="1"/>
  <polygon points="0,25 5,15 10,25" fill="#59BFC6" stroke-width="1"/>
  <polygon points="15,25 20,15 25,25" fill="#59BFC6" stroke-width="1"/>
</g>

<g class="triangle_group" transform="translate(121.5,211)">
  <polygon points="7,10 12,0 17,10" fill="#59BFC6" stroke-width="1"/>
  <polygon points="0,25 5,15 10,25" fill="#59BFC6" stroke-width="1"/>
  <polygon points="15,25 20,15 25,25" fill="#59BFC6" stroke-width="1"/>
</g>
```

We will give each group a class and get rid of these styles from our HTML.

Adding the Style to Group Inside CSS

Groups let us add styles so that they trickle down to the inner elements.

```html
<g class="triangle_group" transform="translate(45,67)">
  <polygon points="7,10 12,0 17,10" />
  <polygon points="0,25 5,15 10,25" />
  <polygon points="15,25 20,15 25,25" />
</g>

<g class="triangle_group" transform="translate(198,67)">
  <polygon points="7,10 12,0 17,10" />
  <polygon points="0,25 5,15 10,25" />
  <polygon points="15,25 20,15 25,25" />
</g>

<g class="triangle_group" transform="translate(121.
  <polygon points="7,10 12,0 17,10" />
  <polygon points="0,25 5,15 10,25" />
  <polygon points="15,25 20,15 25,25" />
</g>
```
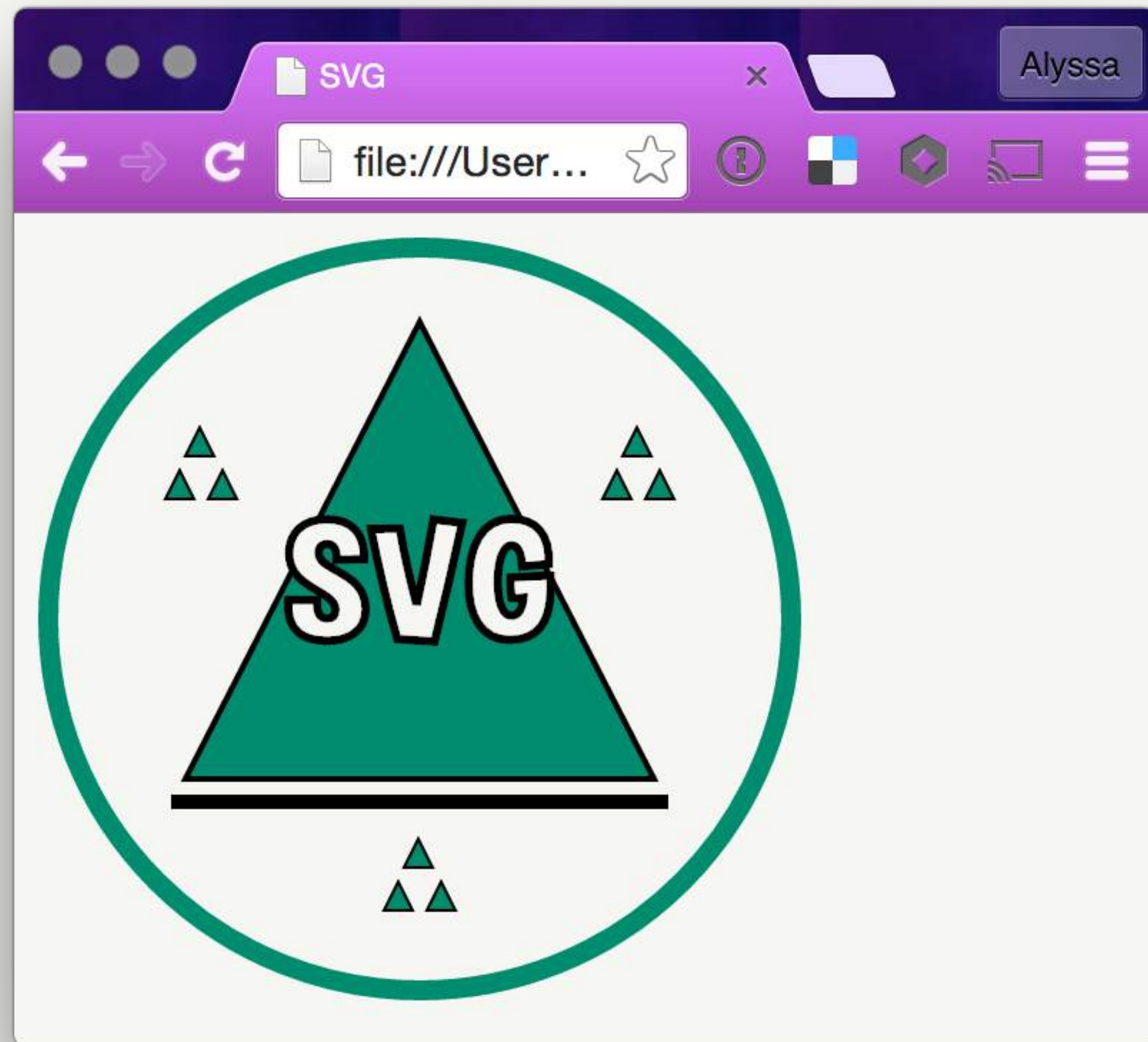
style.css

```css
polygon {
  fill: #008B6F;
  stroke: #000;
  stroke-width: 2px;
}

.triangle_group polygon {
  stroke-width: 1px;
}
```

The Badge Is Looking Great!

Groups allowed us to translate the entire group to its desired position.


```
<g class="triangle_group"
    transform="translate(45,67)">
  ...
</g>

<g class="triangle_group"
    transform="translate(198,67)">
  ...
</g>

<g class="triangle_group"
    transform="translate(121.5,211)">
  ...
</g>
```

We also used groups to add semantic classes and moved our styles over to a stylesheet!

Challenges